INDEX TO AUTHORS

ANSON, M. L. See MIRSKY and ANSON, 307

ARNOLD, WILLIAM A., and KOHN, HENRY I. The chlorophyll unit in photosynthesis, 109

— and WINSOR, C. P. On the theoretical significance of Talbot's law, 97

—. See OSTER and ARNOLD, 351

BAUER, JOHANNES H., and HUGHES, THOMAS P. The preparation of the graded collodion membranes of Elford and their use in the study of filtrable viruses, 143

BAUMBERGER, J. P. See EAGLE and BAUMBERGER, 809

BLAIR, H. A. Conduction in nerve fibers, 125

—. On the relation of direct currents to condenser discharges as stimuli, 755

BLINKS, L. R. Protoplasmic potentials in *Halicystis*. IV. Vacuolar perfusion with artificial sap and sea water, 409

BONNER, JAMES, and THIMANN, KENNETH V. Studies on the growth hormone of plants. VII. The fate of growth substance in the plant and the nature of the growth process, 649

CASTLE, E. S., and HONEYMAN, A. J. M. The light growth response and the growth system of *Phycomyces*, 385

COHN, WALDO E. See GREENBERG and COHN, 93

COLE, KENNETH S. Electric impedance of *Hipponoë* eggs, 877

CROZIER, W. J. The geotropic response in *Asterina*, 729

—. On the geotropic orientation of *Helix*, 659

—. On the modification of temperature characteristics. I, 801

—. On reversal of geotropism in *Asterina*, 739

— and KROPP, BENJAMIN. Orientation by opposed beams of light, 743

—, PINCUS, G., and RENSHAW, B. Temperature characteristics for heart beat frequency in mice, 491

—, TANG, P. S., and FRENCH, C. S. Temperature characteristics for metabolism of *Chlorella*. I. The rate of O_2 utilization of *Chlorella pyrenoidosa* with added dextrose, 113

—. See ENZMANN and CROZIER, 791

CURTIS, HOWARD J. See FRICKE and CURTIS, 821

DOUGAN, RUTH B. See HITCHCOCK and DOUGAN, 485

EAGLE, HARRY. Studies on blood coagulation. I. The rôle of prothrombin and of platelets in the formation of thrombin, 531

—. II. The formation of fibrin from thrombin and fibrinogen, 547

EAGLE, HARRY. Studies on blood coagulation. IV. The nature of the clotting deficiency in hemophilia, 813
— and BAUMBERGER, J. P. Studies on blood coagulation. III. On the constancy of the hydrogen ion concentration during the coagulation of fibrinogen by thrombin, 809
ENZMANN, E. V., and CROZIER, W. J. Relation between birth weight and litter size in multiparous mammals, 791
— and PINCUS, G. The extinction of reflexes in spinal mice of different ages as an indicator of the decline of anaerobiosis, 163

FLEISCHER, WALTER E. The relation between chlorophyll content and rate of photosynthesis, 573
FRENCH, C. S. Temperature characteristics for the metabolism of *Chlorella*. III. The catalytic decomposition of hydrogen peroxide by *Chlorella pyrenoidosa*, 209
—, KOHN, HENRY I., and TANG, P. S. Temperature characteristics for the metabolism of *Chlorella*. II. The rate of respiration of cultures of *Chlorella pyrenoidosa* as a function of time and of temperature, 193
—. See CROZIER, TANG, and FRENCH, 113
FRICKE, HUGO. The rate of escape of hemoglobin from the hemolyzed red corpuscle, 103
— and CURTIS, HOWARD J. The electric impedance of hemolyzed suspensions of mammalian erythrocytes, 821

GATES, FREDERICK L. The absorption of ultraviolet radiation by crystalline pepsin, 265
—. The temperature coefficient of inactivation of crystalline pepsin by ultraviolet radiation, 279
GIESE, A. C., and LEIGHTON, P. A. Quantitative studies on the photolethal effects of quartz ultraviolet radiation upon *Paramecium*, 557
GORTER, EVERT. The spreading of pepsin and of trypsin, 421
— and SEEDER, WILHELM ADOLF. An apparatus for pressure measurements of spreading substances, 427
GRAHAM, C. H., and HARTLINE, H. K. The response of single visual sense cells to lights of different wave lengths, 917
GREENBERG, DAVID M., and COHN, WALDO E. The "bound" water of biological colloids: a reply, 93

HAND, DAVID B. Correlation of the viscosities of protein solutions with their ability to crystallize, 847
HARTLINE, H. K. See GRAHAM and HARTLINE, 917
HECHT, SELIG. A theory of visual intensity discrimination, 767
HERRIOTT, ROGER M. A convenient ketene generator, 69
— and NORTHROP, JOHN H. Crystalline acetyl derivatives of pepsin, 35
HILL, SAMUEL E. Stimulation by cold in *Nitella*, 357
— and OSTERHOUT, W. J. V. Mechanical restoration of irritability and of the potassium effect, 687
— and —. Nature of the action current in *Nitella*. II. Special cases, 377
—. See OSTERHOUT and HILL, 369, 499, 681
HITCHCOCK, DAVID I., and DOUGAN, RUTH B. Freezing points of anticoagulant salt solutions, 485

HOAGLAND, HUDSON. Adaptation of cutaneous tactile receptors. II, 255
—. Electrical responses from the lateral line nerves of fishes. V. Responses in the central nervous system, 89
— and PERKINS, CLIFTON T. Some temperature characteristics in man, 399
HONEYMAN, A. J. M. See CASTLE and HONEYMAN, 385
HUGHES, THOMAS P. See BAUER and HUGHES, 143
HUSSEY, RAYMOND, and THOMPSON, WILLIAM R. The effects of radiations on biological systems. II. Immediate and subsequent effects of x-ray irradiation upon respiration of *Drosophila* larvae, 669

INGRAHAM, RAYMOND C., and VISSCHER, MAURICE B. Studies on the elimination of dyes in the gastric and pancreatic secretions, and inferences therefrom concerning the mechanisms of secretion of acid and base, 695

JACQUES, A. G. The accumulation of electrolytes. VII. Organic electrolytes. Part 1, 235
—. VII. Organic electrolytes. Part 2, 283
— and OSTERHOUT, W. J. V. The kinetics of penetration. XI. Entrance of potassium into *Nitella*, 967
JOFFE, ELEANORE W. A physical-chemical difference in antibodies against the S and R variants of a single bacterial strain, 615
— and MUDD, STUART. A paradoxical relation between zeta potential and suspension stability in S and R variants of intestinal bacteria, 599
JOHLIN, J. M. Osmotic relationships in the hen's egg as determined by relative vapor pressures, 481

KAMERLING, S. E., and OSTERHOUT, W. J. V. The kinetics of penetration. IX. Models of mature cells, 229
KOHN, HENRY I. See ARNOLD and KOHN, 109
—. See FRENCH, KOHN, and TANG, 193
KROPP, BENJAMIN. See CROZIER and KROPP, 743
KUNITZ, M. A method for determining the rennet activity of chymotrypsin, 459
— and NORTHROP, JOHN H. Crystalline chymo-trypsin and chymotrypsinogen. I. Isolation, crystallization, and general properties of a new proteolytic enzyme and its precursor, 433

LEIGHTON, P. A. See GIESE and LEIGHTON, 557
LONGSWORTH, LEWIS G. The theory of diffusion in cell models. II. Solution of the steady state for three diffusing substances, 627

MEHL, JOHN W., and SCHMIDT, CARL L. A. The conductivities of aqueous solutions of glycine, *d*, *l*-valine, and *l*-asparagine, 467
MICHAELIS, LEONOR. See RUNNSTRÖM and MICHAELIS, 717
MIRSKY, A. E., and ANSON, M. L. Sulfhydryl and disulfide groups of proteins. I. Methods of estimation, 307
MONAGHAN, BETTY, WHITE, H. L., and URBAN, FRANK. A comparison of the electrophoretic velocities of cellophane and collodion suspensions with electroosmotic velocities through membranes of the same materials, 523

MONAGHAN, BETTY. See WHITE, MONAGHAN, and URBAN, 515
MOYER, LAURENCE S. Electrophoresis of sterols. II. Ergosterol, 749
MUDD, STUART. See JOFFE and MUDD, 599

NORTHROP, JOHN H. See HERRIOTT and NORTHROP, 35
—. See KUNITZ and NORTHROP, 433

OSTER, ROBERT H. Results of irradiating *Saccharomyces* with monochromatic ultraviolet light. I. Morphological and respiratory changes, 71
—. II. The influence of modifying factors, 243
—. III. The absorption of ultraviolet energy by yeast, 251
— and ARNOLD, WILLIAM A. Results of irradiating *Saccharomyces* with monochromatic ultraviolet light. IV. Relation of energy to observed inhibitory effects, 351
OSTERHOUT, W. J. V. Chemical restoration in *Nitella*. I. Ammonia and some of its compounds, 987
—. Nature of the action current in *Nitella*. I. General considerations, 215
— and HILL, SAMUEL E. Nature of the action current in *Nitella*. III. Some additional features, 499
— and —. Positive variations in *Nitella*, 369
— and —. Restoration of the potassium effect by means of action currents, 681
—. See HILL and OSTERHOUT, 377, 687
—. See JACQUES and OSTERHOUT, 967
—. See KAMERLING and OSTERHOUT, 229

PARKER, G. H. The chromatophoral neurohumors of the dogfish, 837
PERKINS, CLIFTON T. See HOAGLAND and PERKINS, 399
PINCUS, G. See CROZIER, PINCUS, and RENSHAW, 491
—. See ENZMANN and PINCUS, 163

RENSHAW, B. See CROZIER, PINCUS, and RENSHAW, 491
RUBIN, MORTON A. Thermal reception in fishes, 643
RUNNSTRÖM, JOHN, and MICHAELIS, LEONOR. Correlation of oxidation and phosphorylation in hemolyzed blood in presence of methylene blue and pyocyanine, 717

SCHECHTER, VICTOR. Electrical control of rhizoid formation in the red alga, *Griffithsia bornetiana*, 1
SCHMIDT, CARL L. A. See MEHL and SCHMIDT, 467
—. See WINNEK and SCHMIDT, 889
SEEDER, WILHELM ADOLF. See GORTER and SEEDER, 427
STARKEY, ROBERT L. Products of the oxidation of thiosulfate by bacteria in mineral media, 325
STEARN, ALLEN E. The application of quantum mechanics to certain cases of homogeneous catalysis. I, 171
—. II. Certain aspects of enzyme action, 301

TANG, P. S. See CROZIER, TANG, and FRENCH, 113
—. See FRENCH, KOHN, and TANG, 193
TENNANT, ROBERT. See THOMPSON and TENNANT, 675

THIMANN, KENNETH V. Studies on the growth hormone of plants. VI. The distribution of the growth substance in plant tissues, 23
—. See BONNER and THIMANN, 649
THOMPSON, WILLIAM R. The effects of radiations on biological systems. III. The effect of ultraviolet light on the respiration of *Drosophila* larvae and the duration of their prepupal period, 869
— and TENNANT, ROBERT. Protective action in irradiation of amylase solutions with ultraviolet light, 675
—. See HUSSEY and THOMPSON, 669

URBAN, FRANK. See MONAGHAN, WHITE, and URBAN, 523
—. See WHITE, MONAGHAN, and URBAN, 515

VISSCHER, MAURICE B. See INGRAHAM and VISSCHER, 695

WALD, GEORGE. Vitamin A eye tissues, 905
WHITE, H. L., MONAGHAN, BETTY, and URBAN, FRANK. Electrical factors influencing the rate of filtration of aqueous electrolyte solutions through cellophane membranes, 515
—. See MONAGHAN, WHITE, and URBAN, 523
WILBRANDT, W. The significance of the structure of a membrane for its selective permeability, 933
WINNEK, PHILIP S., and SCHMIDT, CARL L. A. The solubilities, apparent dissociation constants, and thermodynamic data of the dihalogenated tyrosine compounds, 889
WINSOR, C. P. See ARNOLD and WINSOR, 97
WOLF, ERNST, and ZERRAHN-WOLF, GERTRUD. The effect of light intensity, area, and flicker frequency on the visual reactions of the honey bee, 853
— and —. The validity of Talbot's law for the eye of the honey bee, 865

ZERRAHN-WOLF, GERTRUD. See WOLF and ZERRAHN-WOLF, 853, 865

INDEX TO SUBJECTS

ACID and base, secretion, mechanisms, inferences deduced from elimination of dyes in gastric and pancreatic secretions, 695
Alga, red, *Griffithsia bornetiana*, rhizoid formation, electrical control, 1
Ammonia and compounds in chemical restoration in *Nitella*, 987
Amylase solutions, protective action in irradiation with ultraviolet light, 675
Anaerobiosis, decline, extinction of reflexes in spinal mice of different ages as indicator, 163
Antibodies against S and R variants of single bacterial strain, physical-chemical difference, 615
l-Asparagine, aqueous solutions, conductivities, 467
Asterina, geotropism, 729
—, —, reversal, 739

BACTERIA, intestinal, S and R variants, zeta potential and suspension stability, paradoxical relation, 599
—, oxidation of thiosulfate in mineral media, products, 325
—, single strain, S and R variants, physical-chemical difference in antibodies against, 615
Base and acid, secretion, mechanisms, inferences deduced from elimination of dyes in gastric and pancreatic secretions, 695
Bee, honey, eye, validity of Talbot's law, 865
—, —, visual reactions, effect of light intensity, area, and flicker frequency, 853
Biological colloids, bound water, 93
— systems, effects of radiations, 669, 869
Birth weight and litter size in multiparous mammals, relation, 791
Blood coagulation, 531, 547, 809, 813
— corpuscle, red. *See* Erythrocyte.
—, hemolyzed, oxidation and phosphorylation in presence of methylene blue, correlation, 717
—, —, — — phosphorylation in presence of pyocyanine, correlation, 717

CATALYSIS, homogeneous, application of quantum mechanics, 171, 301
Catalytic decomposition of hydrogen peroxide by *Chlorella pyrenoidosa*, 209
Cell, blood, red. *See* Erythrocyte.
Cell models, theory of diffusion, 627
Cellophane and collodion membranes, electroosmotic velocities, comparison with electrophoretic velocities of cellophane and collodion suspensions, 523
— — — suspensions, electrophoretic velocities, comparison with electroosmotic velocities through membranes of same materials, 523
— membranes, electrical factors influencing rate of filtration of aqueous electrolyte solutions through, 515
Cells, mature, models, kinetics of penetration, 229

Cells, single, visual sense, response to lights of different wave lengths, 917
Chemical restoration in *Nitella*, 987
Chemical-physical difference in antibodies against S and R variants of single bacterial strain, 615
Chlorella metabolism, temperature characteristics, 113, 193, 209
— *pyrenoidosa*, catalytic decomposition of hydrogen peroxide, 209
— — cultures, respiration rate as function of time and temperature, 193
— —, rate of oxygen utilization with added dextrose, 113
Chlorophyll content, relation to rate of photosynthesis, 573
— unit in photosynthesis, 109
Chromatophoral neurohumors of dogfish, 837
Chymo-trypsin, crystalline, 433
—, method for determining rennet activity, 459
Chymo-trypsinogen, crystalline, 433
Coagulant, anti-, salt solutions, freezing points, 485
Coagulation, blood, 531, 547, 809, 813
— deficiency, nature in hemophilia, 813
— of fibrinogen by thrombin, constancy of hydrogen ion concentration, 809
Collodion and cellophane membranes, electroosmotic velocities, comparison with electrophoretic velocities of collodion and cellophane suspensions, 523
— — — suspensions, electrophoretic velocities, comparison with electroosmotic velocities through membranes of same materials, 523
— membranes of Elford, graded, preparation, 143
Collodion membranes of Elford, graded, use in study of filtrable viruses, 143
Colloids, biological, bound water, 93
Condenser discharges as stimuli, relation of direct currents, 755
Conduction in nerve fibers, 125
Conductivity, aqueous solutions of *l*-asparagine, 467
—, — — — glycine, 467
—, — — — *d*, *l*-valine, 467
Corpuscle, blood, red. *See* Erythrocyte.
Cultivation, *Chlorella pyrenoidosa*, respiration rate as function of time and temperature, 193

DEXTROSE and rate of oxygen utilization of *Chlorella pyrenoidosa*, 113
Diffusion in cell models, theory, 627
Dissociation constants, apparent, solubilities, and thermodynamic data of dihalogenated tyrosine compounds, 889
Disulfide groups of proteins, methods of estimation, 307
Dogfish, chromatophoral neurohumors, 837
Drosophila larvae, duration of prepupal period, effect of ultraviolet light, 869
— —, respiration, effect of ultraviolet light, 869
— —, —, immediate and subsequent effects of x-ray irradiation, 669
Dyes, elimination in gastric and pancreatic secretions, inferences concerning mechanisms of secretion of acid and base, 695

EGG, hen's, osmotic relationships determined by relative vapor pressures, 481

Eggs, *Hipponoë*, electric impedance, 877
Electric control of rhizoid formation in red alga, *Griffithsia bornetiana*, 1
— factors influencing rate of filtration of aqueous electrolyte solutions through cellophane membranes, 515
— impedance of hemolyzed suspensions of mammalian erythrocytes, 821
— — — *Hipponoë* eggs, 877
— responses from lateral line nerves of fishes, 89
Electrolyte solutions, aqueous, electrical factors influencing rate of filtration through cellophane membranes, 515
Electrolytes, organic, accumulation, 235, 283
Electroosmotic velocities through membranes of cellophane and collodion, comparison with electrophoretic velocities of cellophane and collodion suspensions, 523
Electrophoresis, sterols, 749
Electrophoretic velocities of cellophane and collodion suspensions, comparison with electroosmotic velocities through membranes of same materials, 523
Elford, membranes, graded collodion, preparation, 143
—, —, — —, use in study of filtrable viruses, 143
Enzyme action, 301
—, proteolytic, chymo-trypsin, and precursor, chymo-trypsinogen, crystallization, 433
—, —, —, — precursor, chymo-trypsinogen, general properties, 433
—, —, —, — precursor, chymo-trypsinogen, isolation, 433
Ergosterol, electrophoresis, 749
Erythrocyte, hemolyzed, rate of escape of hemoglobin, 103
Erythrocytes, mammalian, hemolyzed suspensions, electric impedance, 821
Eye, honey bee, validity of Talbot's law, 865
— tissues, vitamin A in, 905

FIBRIN, formation from thrombin and fibrinogen, 547
Fibrinogen, coagulation by thrombin, constancy of hydrogen ion concentration, 809
— and thrombin, formation of fibrin from, 547
Filtrable viruses, studied by means of graded collodion membranes of Elford, 143
Filtration, aqueous electrolyte solutions, through cellophane membranes, electrical factors influencing rate, 515
Fishes, lateral line nerves, electrical responses, 89
—, thermal reception, 643
Fowl, osmotic relationships in hen's egg determined by relative vapor pressures, 481
Freezing points of anticoagulant salt solutions, 485

GASTRIC and pancreatic secretions, elimination of dyes in, inferences concerning mechanisms of secretion of acid and base, 695
Geotropism in *Asterina*, 729
— — *Helix*, 659
—, reversal in *Asterina*, 739
Glycine, aqueous solutions, conductivities, 467
Griffithsia bornetiana, rhizoid formation, electrical control, 1
Growth hormone in plant tissues, distribution, 23
— — of plants, 23, 649
—, response to light, and growth system of *Phycomyces*, 385

Growth system of *Phycomyces* and light growth response, 385

HALICYSTIS, protoplasmic potentials, 409
Heart beat frequency in mice, temperature characteristics, 491
Helix, geotropic orientation, 659
Hemoglobin, rate of escape from hemolyzed red corpuscle, 103
Hemolysis, blood, oxidation and phosphorylation in presence of methylene blue, correlation, 717
—, —, — — phosphorylation in presence of pyocyanine, correlation, 717
—, red corpuscle, rate of escape of hemoglobin, 103
Hemolyzed suspensions of mammalian erythrocytes, electric impedance, 821
Hemophilia, nature of clotting deficiency, 813
Hipponoë eggs, electric impedance, 877
Hormone, growth, plant, 23, 649
Hydrogen ion concentration, constancy during coagulation of fibrinogen by thrombin, 809
— peroxide, catalytic decomposition by *Chlorella pyrenoidosa*, 209

INTESTINAL bacteria, S and R variants, zeta potential and suspension stability, paradoxical relation, 599
Irritability and potassium effect, mechanical restoration, 687

KETENE generator, 69

Kinetics of penetration, 967
— — —, models of mature cells, 229

LARVAE, *Drosophila*, duration of prepupal period, effect of ultraviolet light, 869
Larvae, *Drosophila*, respiration, effect of ultraviolet light, 869
—, —, —, immediate and subsequent effects of x-ray irradiation, 669
Light growth response and growth system of *Phycomyces*, 385
— intensity, area, and flicker frequency, effect on visual reactions of honey bee, 853
—, opposed beams, orientation by, 743
—, ultraviolet, absorption of energy by yeast, 251
—, —, effect on duration of prepupal period of *Drosophila* larvae, 869
—, —, — — respiration of *Drosophila* larvae, 869
—, —, monochromatic, irradiation of *Saccharomyces*, 71, 243, 251, 351
—, —, protective action in irradiation of amylase solutions, 675
Lights of different wave lengths, response of single visual sense cells, 917

MAMMALIAN erythrocytes, hemolyzed suspensions, electric impedance, 821
Mammals, multiparous, birth weight and litter size, relation, 791
Mechanics, quantum, application to homogeneous catalysis, 171, 301
Media, mineral, products of oxidation of thiosulfate by bacteria in, 325
Membrane structure, selective permeability, significance for, 933
Membranes, cellophane and collodion, electroosmotic velocities through, comparison with electrophoretic velocities of cellophane and collodion suspensions, 523
—, —, electrical factors influencing rate of filtration of aqueous electrolyte solutions through, 515

Membranes, Elford, graded collodion, preparation, 143
—, —, — —, use in study of filtrable viruses, 143
Metabolism, *Chlorella*, temperature characteristics, 113, 193, 209
Methylene blue, oxidation and phosphorylation in hemolyzed blood in presence of, correlation, 717
Mineral media, products of oxidation of thiosulfate by bacteria in, 325
Morphology, changes in *Saccharomyces* irradiated with monochromatic ultraviolet light, 71

NERVE fibers, conduction, 125
Nerves, lateral line, of fishes, electrical responses, 89
Nervous system, central, of fishes, electrical responses from lateral line nerves, 89
Neurohumors, chromatophoral, of dogfish, 837
Nitella, action current, 215, 377, 499
—, chemical restoration, 987
—, entrance of potassium, 967
—, positive variations, 369
—, stimulation by cold, 357

ORIENTATION by opposed beams of light, 743
—, geotropic, in *Helix*, 659
Osmotic relationships in hen's egg determined by relative vapor pressures, 481
Oxidation of thiosulfate by bacteria in mineral media, products, 325
— and phosphorylation in hemolyzed blood in presence of methylene blue, correlation, 717
— — — — hemolyzed blood in presence of pyocyanine, correlation, 717
Oxygen utilization, *Chlorella pyrenoidosa*, rate with added dextrose, 113

PANCREATIC and gastric secretions, elimination of dyes in, inferences concerning mechanisms of secretion of acid and base, 695
Paramecium, photolethal effects of quartz ultraviolet radiation, quantitative studies, 557
Penetration, kinetics, 967
—, —, models of mature cells, 229
Pepsin, crystalline, absorption of ultraviolet radiation, 265
—, — acetyl derivatives, 35
—, —, temperature coefficient of inactivation by ultraviolet radiation, 279
—, spreading, 421
Permeability, selective, significance of membrane structure, 933
Phosphorylation and oxidation in hemolyzed blood in presence of methylene blue, correlation, 717
— — — — hemolyzed blood in presence of pyocyanine, correlation, 717
Photolethal effects of quartz ultraviolet radiation on *Paramecium*, quantitative studies, 557
Photosynthesis, chlorophyll unit, 109
—, rate, relation to chlorophyll content, 573
Phycomyces, light growth response and growth system, 385
Physical-chemical difference in antibodies against S and R variants of single bacterial strain, 615
Plant, fate of growth substance and nature of growth process, 649
— tissues, growth substance, distribution, 23
Plants, growth hormone, 23, 649

Platelets, rôle in formation of thrombin, 531
Potassium effect and irritability, mechanical restoration, 687
— —, restoration by means of action currents, 681
—, entrance into *Nitella*, 967
Potential, zeta, and suspension stability in S and R variants of intestinal bacteria, paradoxical relation, 599
Potentials, protoplasmic, in *Halicystis*, 409
Pressure measurements of spreading substances, apparatus, 427
Pressures, vapor, relative, used to determine osmotic relationships in hen's egg, 481
Protein solutions, viscosities, correlation with ability to crystallize, 847
Proteins, disulfide groups, methods of estimation, 307
—, sulfhydryl groups, methods of estimation, 307
Proteolysis, enzyme, chymo-trypsin, and precursor, chymo-trypsinogen, crystallization, 433
—, —, —, — precursor, chymotrypsinogen, general properties, 433
—, —, —, — precursor, chymotrypsinogen, isolation, 433
Prothrombin, rôle in formation of thrombin, 531
Protoplasmic potentials in *Halicystis*, 409
Pyocyanine, oxidation and phosphorylation in hemolyzed blood in presence of, correlation, 717

QUANTUM mechanics, application to homogeneous catalysis, 171, 301

RADIATION of amylase solutions with ultraviolet light, protective action, 675
Radiation of *Saccharomyces* with monochromatic ultraviolet light, 71, 243, 251, 351
—, ultraviolet, absorption by crystalline pepsin, 265
—, —, quartz, photolethal effects on *Paramecium*, quantitative studies, 557
—, —, temperature coefficient of inactivation of crystalline pepsin, 279
—, x-ray, immediate and subsequent effects on respiration of *Drosophila* larvae, 669
Radiations, effects on biological systems, 669, 869
Reflexes, spinal, extinction in mice of different ages, indicator of decline of anaerobiosis, 163
Rennet activity of chymo-trypsin, method, 459
Respiration, changes in *Saccharomyces* irradiated with monochromatic ultraviolet light, 71
—, *Drosophila* larvae, effect of ultraviolet light, 869
—, — —, immediate and subsequent effects of x-ray irradiation, 669
— rate of *Chlorella pyrenoidosa* cultures as function of time and temperature, 193
Rhizoid formation in red alga, *Griffithsia bornetiana*, electrical control, 1
Roentgen rays. *See* X-ray.

SACCHAROMYCES, irradiation with monochromatic ultraviolet light, 71, 243, 251, 351
Salt solutions, anticoagulant, freezing points, 485
Sap, artificial, vacuolar perfusion in *Halicystis*, 409
Secretion of acid and base, mechanisms, inferences deduced from elimination of dyes in gastric and pancreatic secretions, 695

Secretion of base and acid, mechanisms, inferences deduced from elimination of dyes in gastric and pancreatic secretions, 695
Secretions, gastric and pancreatic, elimination of dyes in, inferences concerning mechanisms of secretion of acid and base, 695
—, pancreatic and gastric, elimination of dyes in, inferences concerning mechanisms of secretion of acid and base, 695
Sense cells, single, visual, response to lights of different wave lengths, 917
Sensory adaptation, cutaneous, 255
Skin, tactile receptors, adaptation, 255
Spinal reflexes, extinction in mice of different ages, indicator of decline of anaerobiosis, 163
Sterols, electrophoresis, 749
Stimulation by cold in *Nitella*, 357
Stimuli, condenser discharges, relation of direct currents, 755
Sulfhydryl groups of proteins, methods of estimation, 307

TALBOT'S law, theoretical significance, 97
— —, validity for eye of honey bee, 865
Temperature characteristics for heart beat frequency in mice, 491
— — — metabolism of *Chlorella*, 113, 193, 209
— — in man, 399
— —, modification, 801
— coefficient of inactivation of crystalline pepsin by ultraviolet radiation, 279
— and time, respiration rate of *Chlorella pyrenoidosa* cultures as function of, 193
Thermal reception in fishes, 643
Thermodynamic data, solubilities, and apparent dissociation constants of dihalogenated tyrosine compounds, 889
Thiosulfate, oxidation by bacteria in mineral media, products, 325
Thrombin, coagulation of fibrinogen by, constancy of hydrogen ion concentration, 809
— and fibrinogen, formation of fibrin from, 547
—, rôle of platelets in formation, 531
—, — — prothrombin in formation, 531
Tissues, eye, vitamin A in, 905
—, plant, growth substance, distribution, 23
Trypsin, spreading, 421
Tyrosine compounds, dihalogenated, solubilities, apparent dissociation constants, and thermodynamic data, 889

ULTRAVIOLET light, absorption by crystalline pepsin, 265
— —, — of energy by yeast, 251
— —, effect on duration of prepupal period of *Drosophila* larvae, 869
— —, — — respiration of *Drosophila* larvae, 869
— —, monochromatic, irradiation of *Saccharomyces*, 71, 243, 251, 351
— —, protective action in irradiation of amylase solutions with, 675
— —, quartz, photolethal effects on *Paramecium*, quantitative studies, 557
— —, temperature coefficient of inactivation of crystalline pepsin, 279

VACUOLAR perfusion in *Halicystis* with artificial sap, 409

Vacuolar perfusion in *Halicystis* with sea water, 409
d,l-Valine, aqueous solutions, conductivities, 467
Viruses, filtrable, studied by means of graded collodion membranes of Elford, 143
Viscosities of protein solutions, correlation with ability to crystallize, 847
Vision, effect of light intensity, area, and flicker frequency on reactions of honey bee, 853
—, intensity discrimination, theory, 767
Vision, response of single sense cells to lights of different wave lengths, 917
Vitamin A in eye tissues, 905

WATER, bound, of biological colloids, 93
—, sea, vacuolar perfusion in *Halicystis*, 409

X-RAY irradiation, immediate and subsequent effects on respiration of *Drosophila* larvae, 669

YEAST, absorption of ultraviolet energy, 251